

IN THE CLAIMS:

1-19. Canceled

20. (Currently Amended) A sub-micron MOS transistor comprising:
a substrate;
an active region, including a gate region having a length of less than one micron; a source region including a LDD source region; and a drain region including a LDD drain region; wherein the ion concentration in said source region and in said drain region is between about $1 \cdot 10^{20} \text{ cm}^{-3}$ to $1 \cdot 10^{21} \text{ cm}^{-3}$, and wherein the ion concentration in said LDD source region and in said LDD drain region is between about $5 \cdot 10^{18} \text{ cm}^{-3}$ to $5 \cdot 10^{19} \text{ cm}^{-3}$; and
a gate oxide layer overlying the gate region having a length at least five times greater than about twice as long as the gate region length.

21. (Previously Presented) The MOS transistor of claim 20 further comprising:
a source electrode;
a drain electrode; and
a gate electrode having a length about half the length of the gate oxide layer.

22. (New) A replacement cast MOS transistor comprising:
a substrate;
a source region including a LDD source region;

a drain region including a LDD drain region;
a gate region overlying the substrate, interposed between the source and drain LDD regions;
a gate oxide layer overlying the gate region;
a temporary LDD overhang cast; and,
a gate electrode overlying the gate oxide layer.

23. (New) The MOS transistor of claim 22 wherein the LDD overhang cast has a "T"-shape.

24. (New) The MOS transistor of claim 23 wherein the LDD overhang cast comprises:

a gate electrode replacement plug with a first length;
an overhang layer overlying the gate electrode replacement plug, having a second length greater than the first length; and
wherein the gate electrode has a length approximately equal to the first length.

25. (New) The MOS transistor of claim 24 wherein the gate electrode replacement plug first length is approximately half the overhang layer second length.

26. (New) The MOS transistor of claim 24 wherein the gate electrode replacement plug is a material selected from the group comprising silicon oxide, polysilicon, and silicon nitride; and,

wherein the overhang layer is a material selected from the group comprising silicon oxide, polysilicon, and silicon nitride.

27. (New) The MOS transistor of claim 24 wherein the gate electrode replacement plug first length is less than 1 micron.

28. (New) The MOS transistor of claim 22 wherein the source and drain regions each have an ion concentration of about $1 \cdot 10^{20} \text{ cm}^{-3}$ to $1 \cdot 10^{21} \text{ cm}^{-3}$; and,

wherein source LDD region and drain LDD region each have an ion concentration of about $5 \cdot 10^{18} \text{ cm}^{-3}$ to $5 \cdot 10^{19} \text{ cm}^{-3}$.

29. (New) The MOS transistor of claim 23 wherein the gate electrode replacement plug has a thickness in the range of 200 to 500 nanometers (nm); and,

wherein the overhang layer has a thickness in the range of 20 to 100 nm.

30. (New) The MOS transistor of claim 22 wherein the gate electrode is a material selected from the group including metal and doped polysilicon.